

CURRICULUM VITAE

David Freeman Keren

EDUCATION

Undergraduate: University of Illinois (Urbana), Biology, A.B.
Graduate & Professional: University of Illinois (Chicago), M.D., M.S. in Pathology

POSTDOCTORAL TRAINING

Internship: Department of Pathology, The Johns Hopkins Hospital, Baltimore, MD
Resident: Department of Pathology, The Johns Hopkins Hospital, Baltimore, MD
Resident: Department of Laboratory Medicine, The Johns Hopkins Hospital, Baltimore, MD
Postdoctoral Fellowship: Department of Laboratory Medicine, The Johns Hopkins Hospital, Baltimore, MD,
(Immunohematology & Immunopathology)

ACADEMIC APPOINTMENTS

Assistant Professor of Pathology, Uniform Services University of the Health Sciences, Bethesda, MD, 1977-78
Assistant Professor of Pathology, The University of Michigan Medical School, Ann Arbor, MI, 1978-81
Assistant Professor of Microbiology and Immunology, Department of Pathology, The University of Michigan Medical School, Ann Arbor, MI, 1978-81
Associate Professor of Pathology, The University of Michigan Medical School, Ann Arbor, MI, 1981-1987
Associate Professor of Microbiology and Immunology, Department of Pathology, The University of Michigan Medical School, 1981-1989
Professor of Pathology, The University of Michigan Medical School, Ann Arbor, MI, 1987-1989
Adjunct Professor of Pathology, The University of Michigan Medical School, Ann Arbor, MI, 1989-1991
Clinical Associate, Department of Biology, Eastern Michigan University, Ypsilanti, MI, 1990-1994
Clinical Professor of Pathology, The University of Michigan Medical School, Ann Arbor, MI, 1994-present

ADMINISTRATIVE POSITIONS

Medical Director, Warde Medical Laboratory, Ann Arbor, MI 1989- present
Head, Biochemistry Section, Department of Pathology, The University of Michigan 1985-1989
Director, Clinical Chemistry Laboratory, Department of Pathology, The University of Michigan 1981-85
Director, Clinical Immunology Laboratory, The University of Michigan Medical Center, 1978-1989
Medical Director, Medical Technology Program, University of Michigan, Department of Pathology, 1980-81
Acting Director, Diagnostic Immunology Laboratory, The Johns Hopkins Hospital, 1975-76
Chief Resident, Laboratory Medicine, The Johns Hopkins Hospital
House Staff Council Representative, The Johns Hopkins Hospital

HOSPITAL AND UNIVERSITY COMMITTEE SERVICE

Ann Arbor V.A. Health Services Research Advisory Committee, 1980
The University of Michigan Scientific Advisory Committee - Dental Research Institute, 1980, 1981, 1982
Medical Director, Medical Technology Program, University of Michigan, Department of Pathology, 1980-81
Medical Technology Training Program Committee, University of Michigan, Department of Pathology, 1979-85
Resident Selection Committee, University of Michigan, Department of Pathology, 1979-1985
Clinical Pathology Committee, University of Michigan, Department of Pathology, 1978-1989
Pathology Data Computer Program Committee, University of Michigan, Department of Pathology, 1978-81
Medical Service Plan Executive Committee, University of Michigan, Department of Pathology, 1986
Chairman's Advisory Committee, University of Michigan, Department of Pathology, 1987-1989
Chairman, Stobbe Fund Committee, University of Michigan, Department of Pathology, 1987-1988
Internal Review Committee, University of Michigan, Department of Pathology, 1986-1987
Graduate Program Committee, University of Michigan, Department of Pathology, 1988
Research Committee, Catherine McAuley Health Systems, 1990-2002
Institutional Review Board (IRB), Catherine McAuley Health Systems, 1993-2002

Academy of Clinical Laboratory Physicians and Scientists, Immunology Committee, 1994
Institutional Review Board Chair, St. Joseph Mercy Hospital, Ann Arbor, MI, 1996-2002

MILITARY SERVICE

Major, Research Immunopathologist, Department of Bacterial Disease,
Walter Reed Army Institute of Research, Washington, D.C., 1976-78

HONORS AND AWARDS

James Scholar, University of Illinois
Phi Eta Sigma, University of Illinois
A.B. with High Honors, University of Illinois
Phi Beta Kappa, University of Illinois
Hoffman LaRoche Research Award
Society of Sigma Xi, University of Illinois, College of Medicine
M.D. with Honors, University of Illinois
Pathology Resident Teaching Award, Department of Pathology, The University of Michigan Medical
School, Ann Arbor, MI
Medical Student Teaching Award, The University of Michigan
American Association of Clinical Chemistry Outstanding Lecture Award, 1990, 1992
Distinguished Service Award, American Society for Clinical Pathologists, 1991

MEMBERSHIPS AND OFFICES IN PROFESSIONAL SOCIETIES

A. James French Society of Pathologists
American Association of Clinical Chemists
Secretary, Michigan AACC 1993-1994
Legislative Liaison, Michigan AACC, 1994-1995
American Medical Association
American Society of Clinical Pathologists
Board of Directors, 1995-present
Treasurer, 1998-2001
Vice-President 2001-2002
President Elect 2002-2003
Vice-Chair, Government Relations Committee, 1995-1997
Chair, Government Relations Committee 1997-1998
Chair, EMAC Committee, 1995-1997
Immunopathology Council--Member--1982-1988
Immunopathology Council, Chairman, 1985-1987
Advisory Council 1991-1993, 1995-present
EMAC Committee, 1991-1997
Finance Committee, 1996-2001
Internet Advisory Group, 1996-1999
QM Practice Review Committee, 1996-1997
International Activities Committee, 1996-1999
American Society for Microbiology
College of American Pathologists
Member, Diagnostic Immunology Resource Committee, 1993-2001
Vice-Chair, Diagnostic Immunology Resource Committee, 1994-1998
Gastrointestinal Pathology Society (founding member) 1979
Chairman, By-Laws Committee, 1979-1980
Chairman, Education Committee, 1983-1984
Editor, Newsletter, 1988-1991
President-elect, 1991-1992
President, 1992-1993

Past-President, 1993-1994
 George F. Stevenson Society (founding member) 2000
 International Academy of Pathology (United States, Canadian Association of Pathologists)
 Michigan Society of Pathologists
 Board of Directors 1998-2002
 Past President 2001-2002
 President, 1999-2000
 President-elect, 1998-1999

PUBLICATIONS IN SCIENTIFIC JOURNALS

1. Salyer, W.R. and Keren, D.F.: Oxalosis as a complication of chronic renal failure. *Kidney Internat.* 1973;4:61-66.
2. Yardley, J.H. and Keren, D.F.: "Precancer" lesions in ulcerative colitis. A retrospective study of rectal biopsy and colectomy specimens. *Cancer* 1974;34:835-844.
3. Keren, D.F., Elliott, H.L., Brown, G.D. and Yardley, J.H.: Atrophy of villi with hypertrophy and hyperplasia of Paneth cells in isolated (Thiry-Vella) ileal loops in rabbits. *Gastroenterology* 1975;68:83-93.
4. Keren, D.F., Milligan, F.D., Strandberg, J.D. and Yardley, J.H.: Intercurrent cytomegalovirus colitis in a patient with ulcerative colitis. *Johns Hopkins Med. J.* 1975;136:178-182.
5. Keren, D.F., Rawlings, W., Jr., Murray, H.W. and Leonard, W.R.: Arizona hinshawii osteomyelitis with antecedent enteric fever and sepsis. A case report with a review of the literature. *Am. J. Med.* 1976;60: 577-582.
6. Yardley, J.H. and Keren, D.F.: Immunization to cholera toxin studied in isolated (Thiry-Vella) loops in rabbits. In, *Proceedings of the Eleventh Joint Conference on Cholera, USDHEW, NIH publication, 1976; 384-393.*
7. Sack, R.B., Johnson, J., Pierce, N.F., Keren, D.F. and Yardley, J.H.: Challenge of dogs with live enterotoxigenic *Escherichia coli* and effects of repeated challenges on fluid secretion in jejunal Thiry-Vella loops. *J. Inf. Dis.* 1976;134:15-24.
8. Keren, D.F. and Grindon, A.J.: Blood components instead of blood. *Drug Therapy* 1976;6:36-44.
9. Keren, D.F., Weisburger, W.R., Yardley, J.H., Salyer, W.R., Arthur, R.R. and Charache, P.: Whipple's disease: Demonstration by immunofluorescence of similar bacterial antigens in macrophages from three cases. *Johns Hopkins Med. J.* 1976;139:51-59.
10. Keren, D.F., Nightingale, S.D., Hamilton, C.L., Charache, P. and Walker, W.G.: Antibody-coated bacteria as an indicator of the site of urinary tract infection in renal transplant recipients receiving immunosuppressive agents. *Am. J. Med.* 1977;63:855-858.
11. Yardley, J.H., Hamilton, S.R. and Keren, D.F.: Suppression of local immune response to cholera toxin by systemic immunization with toxin or toxoids. In, *Proceedings of the Thirteenth Joint Conference on Cholera USDHEW, NIH publication. 1978;No. 78-1590:503-510.*
12. Keren, D.F., Holt, P.S., Collins, H.H., Gemski, P. and Formal, S.B.: The role of Peyer's Patches in the local immune response of rabbit ileum to live bacteria. *J. Immunol.* 1978;120:1892-1896.
13. Keren, D.F., Frye, R.M., Datiles, R.B. and Grindon, A.J.: A modification of the automated immune precipitin method for quantitation of human serum immunoglobulins. *Am. J. Clin. Pathol.* 1978;70:41-44.
14. Yardley, J.H., Keren, D.F., Hamilton, S.R. and Brown, G.D.: Local (IgA) immune response by the intestine to cholera toxin and its partial suppression with combined systemic and intrainestinal immunization. *Infect. and Immun.* 1978;19:589-597.
15. Spitz, R.D., Keren, D.F., Boitnott, J.K. and Maddrey, W.C.: Bridging hepatic necrosis: Etiology and prognosis. *Digest. Dis.* 1978;23:1076- 1078.
16. Lum, L.G., Muchmore, A.V., Keren, D.F., Decker, J., Koski, I., Strober, W. and Blase, R.M: A receptor for IgA on human T lymphocytes. *J. Immunol.* 1979;122:65-69.
17. Keren, D.F.: Enzyme-linked immunosorbent assay for immunoglobulin G and immunoglobulin A antibodies to *Shigella flexneri* antigens. *Infect. and Immun.* 1979;24:441-448.
18. Keren, D.F., Weinrieb, I.J., Bertovich, M.J. and Brady, P.G.: Whipple's disease: No consistent mitogenic or cytotoxic defect in lymphocyte function from three cases. *Gastroenterol.* 1979;77:991-996.
19. Qualman, S.J. and Keren, D.F.: Immunofluorescence on deparaffinized trypsin-treated renal tissues: Preservation of antigen and adjunct to diagnosis of disease. *Lab. Invest.* 1979;41:483-489.

20. Keren, D.F., Collins, H.H., Holt, P.S., Gemski, P. and Formal, S.B.: The local humoral immune response to *Shigella flexneri* hybrids using Thiry-Vella loops in rabbits. In, Proceedings of the Fifteenth Joint Conference on Cholera, USDHEW, NIH publication 1980;No. 80-2003: 202-213.
21. Keren, D.F., Collins, H.H., Holt, P.S., Gemski, P. and Formal, S.B.: Variables affecting the local immune response in Thiry-Vella loops. I. Role of immunization schedule, bacterial flora and post-surgical inflammation. *Infect. and Immun.* 1980;28:950-956.
22. Keren, D.F., Scott, P.J. and Bauer, D.B.: Variables affecting the local immune response in Thiry-Vella loops. II. Stability of antigen specific IgG and secretory IgA in acute and chronic Thiry-Vella loops. *J. Immunol.* 1980;124:2620-2624.
23. Nishiyama, R.H., Torretti, B., Martin, D.B., Pek, S. and Keren, D.F.: The detection of islet-cell antibodies by immunofluorescence in Bouin's fixed, paraffin-embedded human pancreas. *Lab. Invest.* 1980;43:191-195.
24. Hamilton, S.R., Keren, D.F., Boitnott, J.K., Robertson, S.M. and Yardley, J.H.: IgA content of intestinal epithelium and secreted fluid in experimental cholera: Comparison with net fluid production and goblet cell mucin content. *Gut.* 1980;21:365-369.
25. Swanson, N.A., Keren, D.F. and Headington, J.T.: Extramedullary IgM plasmacytoma presenting in skin. *Am. J. Dermatopathol.* 1981;3:79-83.
26. Keren, D.F., Collins, H.H., Gemski, P., Holt, P.S. and Formal, S.B.: Role of antigen form in development of mucosal immunoglobulin A response to *Shigella flexneri* antigens. *Infect. Immun.* 1981;31: 1193- 1202.
27. Hamilton, S.R., Keren, D.F., Yardley, J.H. and Brown, G.D.: No impairment of local intestinal immune response to keyhole-limpet hemocyanin in the absence of Peyer's patches. *Immunol.* 1981;42:431-435.
28. Keren, D.F.: Whipple's disease: A review emphasizing immunology and microbiology. *CRC Critical Reviews Lab. Med.* 1981;14:75-108.
29. Weesner, K., Rocchini, A., Heidelberger, K., Rosenthal, A. and Keren, D.F.: Immune mechanisms in porcine xenograft failure in children. *Circulation* 1981;64:II-162.
30. Bostwick, D.G., Bensch, K.G., Burke, J.S., Billingham, M.E., Miller, D.C., Smith, J.C. and Keren, D.F.: Whipple's disease presenting as aortic insufficiency. *N. Engl. J. Med.* 1981;305:995-998.
31. Atkinson, J.P., Gorman, J.C., Curd, J., Hyla, J.F., Deegan, M.J., Keren, D.F., Abdou, N.I. and Walker, S.E.: Cold dependent activation of complement in SLE: A unique cause for discrepancy between clinical and laboratory parameters. *Arth. Rheum.* 1981;24:592-601.
32. Mutchnik, M.G. and Keren, D.F.: In vitro synthesis of antibody to specific bacterial lipopolysaccharide by peripheral blood mononuclear cells from patients with alcoholic cirrhosis. *Immunol.* 1981;43: 177-182.
33. Flynn, S.D., Keren, D.F., Torretti, B., Dieterle R.C. and Grauds, S.: An enzyme-linked immunosorbent assay (ELISA) to detect insulin antibodies. *Clin. Chem.* 1981;27:1753-1757.
34. Rao, K.M.K., Bordine, S.L. and Keren, D.F.: Decision making by pathologists: A strategy for curtailing inappropriate tests. *Arch. Pathol. Lab. Med.* 1982;106:55-56.
35. Keren, D.F., Kern, S.E., Bauer, D.H., Scott, P.J. and Porter, P.: Direct demonstration in intestinal secretions of an IgA memory response to orally administered *Shigella flexneri* antigens. *J. Immunol.* 1982; 128:475-479.
36. Keren, D.F.: Oral vaccines and the development of mucosal IgA responses. *Clin. Immunol. News.* 1982;3:99-101.
37. Kujada, F.P., Belitsos, N.J., Keren, D.F. and Hutchins, G.M.: A sub mucosal variant of Whipple's disease. *Gastroenterol.* 1982;82:46-50.
38. Keren, D.F., Collins, H.H., Baron, L.S., Kopecko, D.J. and Formal, S.B.: Mucosal (IgA) immune responses of the intestine to a potential vaccine strain: *Salmonella typhi* gal E Ty 21a expressing *Shigella sonnei* form I antigen. *Infect. Immun.* 1982;37:387-389.
39. Clark, K.A. and Keren, D.F.: Demonstration of monoclonal lymphoplasmacytic proliferations by immunofluorescence on routine formalin-fixed, paraffin-embedded tissue. *Cancer* 1982;49:2376-2382.
40. Keren, D.F.: Mucosal (immunoglobulin A) immune response to non-invasive bacteria in the gut. *Microbiology* 1982;357-360.
41. Mozdzen, J.J. and Keren, D.F.: Detection of immunoglobulin A in methacrylate-embedded human colon. *J. Histochem. Cytochem.* 1982;30:532-535.
42. Hamilton, S.R., Keren, D.F., Yardley, J.H. and Brown, G.D.: Effects of parenteral keyhole limpet hemocyanin (KLH) or cholera toxin on intestinal immune response to KLH. *Int. Archs. Allergy Appl. Immunol.* 1982;68:242-246.

43. Schnitzer, B., Lovett, E.J., Hudson, J.L., McClatchey, K.D., Keren, D.F., Dabich, L. and Mitchell, B.F.: Adult T-cell leukaemia-lymphoma with unusual phenotype. *Lancet* 1982;2:1273.
44. Keren, D.F., Scott, P.J., McDonald, R.A. and Keren, S.E.: Local IgA memory response to bacterial antigens. *Ann. N.Y. Acad. Sci.* 1983; 409:734-744.
45. Braunstein, A.H. and Keren, D.F.: Monoclonal gammopathy (IgM-kappa) occurring in Burkitt's lymphoma. *Arch. Pathol. Lab. Med.* 1983;107: 235-238.
46. Keren, D.F.: Local IgA anamnestic response following peroral immunization with *Shigella flexneri* antigens. *Recent Prog. Cholera Res.* 1983;1:31-36.
47. Regezi, J.A., Zarbo, R.J. and Keren, D.F.: Plasma Cell Lesions of the Head and Neck: Immunofluorescent determination of clonality from formalin-fixed, paraffin-embedded tissue. *Oral Surg., Oral Med., Oral Pathol.* 1983;56:616-621.
48. Mutchnik, M.G., Keren, D.F., Weller, F.E., McClure, J.E. and Goldstein, A.L.: Measurement of Thymosin Alpha-1 by disassociation microELISA. *J. Immunol. Methods* 1983;60:53-60.
49. Schaldenbrand, J.D. and Keren, D.F.: IgD Amyloid in an IgD lambda monoclonal conjunctival amyloidoma: A case report. *Arch. Pathol. Lab. Med.* 1983;107:626-628.
50. Tagliabue, A., Nencioni, L., Villa, L., Keren, D.F., Lowell, G.H. and Boraschi, D.: Antibody-dependent cell-mediated antibacterial activity of intestinal lymphocytes with secretory IgA. *Nature* 1983;306:184-186.
51. Keren, D.F., Scott, P.J., McDonald, R.A. and Wiatrak, M.: Effect of parenteral immunization of the local IgA response of the intestine to *Shigella flexneri* antigens. *Infect. Immun.* 1983;42:202-207.
52. Roth, R.I., Owen, R.L. and Keren, D.F.: AIDS with *Mycobacterium avium* intracellular lesions resembling those of Whipple's disease. *New Engl. J. Med.* 1983;309:1324-1325.
53. Rosner, A.J. and Keren, D.F.: Demonstration of M-Cells in the specialized follicle-associated epithelium overlying isolated follicles in the gut. *J. Leukocyte Biol.* 1984;35:397-404.
54. Falck, Jr., F.Y., Keren, D.F., Fine, L.J., Smith, R.G. and McClatchey, K.D.: Cadmium-exposed individuals: high resolution electrophoresis. *Arch. Environ. Health* 1984;39:69-73.
55. Lovett, E.J., Schnitzer, B., Keren, D.F., Flint A., Hudson, J.L. and McClatchey, K.D.: Application of flow cytometry to diagnostic pathology. *Lab. Invest.* 1984;50:115-140.
56. Tramont, E.C., Chung, R., Berman, S., Keren, D.F., Kapfer, G. and Formal, S.B.: Safety and antigenicity of typhoid shigella sonnei vaccine strain 5076-IC. *J. Infec. Dis.* 1984;149:133-138.
57. Keren, D.F., Appelman, H.D., Dobbins, III, W.O., Wells, J.J., Whisenant, B., Foley, J., Dieterle, R. and Geisinger, K.: Correlation of histo pathologic evidence of disease activity with the immunoglobulin-containing cells in the colon of patients with inflammatory bowel disease. *Human Pathol.* 1984;15:757-763.
58. Keren, D.F.: Laboratory diagnosis of autoimmune disease: new anti nuclear antibody testing. *J. Clin. Immunoassay.* 1984;7:321-327.
59. Carey, C.J., Peter, G.K., Crisp, C.E. and Keren, D.F.: Serological analysis of five serotypes of *Pasteurella multocida* of rabbit origin by use of an enzyme-linked immunosorbent assay with lipopolysaccharide as antigen. *J. Clin. Microbiol.* 1984;20:191-194.
60. Tagliabue, A., Boraschi, D., Villa, L., Keren, D.F., Lowell, G.H., Rappuoli, R. and Nencioni, L.: IgA-dependent cell-mediated activity against enteropathogenic bacteria distribution, specificity, and characterization of the effector cells. *J. Immunol.* 1984;133:988-992.
61. Roth, R.I., Owen, R.L., Keren, D.F. and Volberding, P.A.: Intestinal infection with *Mycobacterium avium* in acquired immune deficiency syndrome (AIDS). Histologic and clinical comparison with Whipple's disease. *Dig. Dis. Sci.* 1985;30:497-504.
62. Keren, D.F., McDonald, R.A., Scott, P.J., Rosner, A.M. and Strubel, E.: Effect of antigen form on local immunoglobulin A memory response of intestinal secretions to *Shigella flexneri*. *Infect. Immun.* 1985;47: 123-128.
63. Weller, F.E., Mutchnik, M.G., Keren, D.F., Goldstein, A.G. and Naylor, P.H.: MicroELISA method for measurement of human serum thymosin alpha-1. *J. Immunol. Methods.* 1985;80:40-53
64. Keren, D.F.: Gastrointestinal lymphomas correlation of histopathology with immunohistology: introduction. *Am. J. Surg. Pathol.* 9:Suppl. 1985;67-71.
65. Agha, F.P. and Keren, D.F.: Spindle cell squamous carcinoma of the esophagus: a tumor with biphasic morphology. *Am. J. Radiol.* 1985;145:541-545.

66. Ringler, D.H., Peter, G.K., Chrisp, C.E. and Keren, D.F.: Protection of rabbits against experimental pasteurellosis by vaccination with a potassium thiocyanate extract of *Pasteurella multocida*. *Infect. Immun.* 1985;48:498-504.
67. Keren, D.F., DiSante, A.C., Mervak, T. and Bordine, S.L.: Problems with transporting serum to the laboratory for cryoglobulin assay: a solution. *Clin. Chem.* 1985;31:1766-1767.
68. Keren, D.F.: Pernicious anemia with atrophic gastritis. *ASCP Check Sample Immunopathol.* 1985;85-1:1-5.
69. Francis, I.R., Agha, F.P., Thompson, N.W. and Keren, D.F.: Fibro lamellar hepatocarcinoma: clinical, radiologic and pathologic features. *Gastroent. Radiol.* 1986;11:67-72.
70. Keren, D.F., DiSante, A.C. and Bordine, S.L.: Densitometric scanning of high resolution electrophoresis of serum: Methodology and clinical applications. *Am. J. Clin. Pathol.* 1986;85:348-352.
71. Agha, F.P., Nostrant, T.T. and Keren, D.F.: Leukocytoclastic vasculitis of the small bowel presenting with severe gastrointestinal hemorrhage: A diagnostic challenge. *Am. J. Gastroent.* 1986;81:195-198
72. Freddo, L., Yu, R.K., Latov, N., Donofrio, P.D., Albers, J.W., Alessi, A.G., Leavitt, A., Davar, G. and Keren, D.F.: Gangliosides GMI and GD1b are antigens for IgM m-protein in a patient with motor neuron disease. *Neurology* 1986;36:454-458.
73. Keren, D.F., McDonald, R.A., Scott, P.J., Rosner, A.J. and Strubel, E.J.: Antigen Form and Route of administration in the elicitation of mucosal IgA memory responses to *Shigella flexneri* antigens, *Adv. Res. Cholera Rel. Dis.* 1986;3:277-284.
74. Hirata, I., Berrebi, G., Austin, L.L., Keren, D.F. and Dobbins III, W.O.: Immunohistological Characterization of Intraepithelial and Lamina Propria Lymphocytes in Control Ileum and Colon and in Inflammatory Bowel Disease. *Dig. Dis. and Sci.* 1986;31:593-603.
75. Judd, W.J., Wilkinson, S.L., Issitt, P.D., Johnson, T.L., Keren, D.F. and Steiner, E.A.: Donath-Landsteiner hemolytic anemia due to anti-Pi. *Transfusion.* 1986;26:423-425.
76. Keren, D.F., McDonald, R.A., and Formal, S.B.: Secretory immunoglobulin A response following peroral priming and challenge with *Shigella flexneri* lacking the 140-Megadalton virulence plasmid. *Infec Immun,* 1986;54:920-923.
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79. Johnson, T.L., Keren, D.F., and Thomas, L.R.: Indirect immunofluorescence technique to detect monoclonal anti-nuclear antibody. *Arch Pathol Lab Med* 1987;111:560-562.
80. Lee, H.H., O'Donnell, D.B. and Keren D.F.: Characteristics of melanosis duodeni: Incorporation of endoscopy, pathology and etiology. *Endoscopy* 1987;19:107-109.
81. Keren, D.F.: Models to follow secretory IgA response to mucosal infections. *Pathol Immunopathol Res* 1987;6:128-136.
82. Carey JL Keren DF Correlation of the IgA response in intestinal secretions with cellular events in the development of mucosal immunity. *Adv Exp Med Biol* 1987 216B:951-8
83. Keren DF McDonald RA Enhancement of the secretory IgA response to enteropathogens. *Adv Exp Med Biol* 1987 216B:941-50
84. Kern SE Keren DF Beals TF Varani J A model for Paneth cell study: tissue culture of the hyperplastic Paneth cell population of rabbit Thiry-Vella ileal loops. *Adv Exp Med Biol* 1987 216A:419-26
85. Kern, S.E., Keren, D.F. and Pierson, C.L.: Bacterial overgrowth and mucosal changes in Isolated (Thiry-Vella) ileal loops in rabbits. Effects of Intraluminal antibiotics. *Lab Invest* 1987;57:336-341.
86. Keren, D.F., Kumar, N.B., Appelman, H.D.: Quantification of IgA- containing plasma cells as an adjunct to histopathology in distinguishing acute self-limited colitis from active idiopathic inflammatory bowel disease. *Pathol. Immunopathol. Res.* 1987;6:435-441.
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88. Davenport, R.D., Keren, D.F.: Oligoclonal bands in cerebrospinal fluids: significance of corresponding bands in serum for diagnosis of multiple sclerosis. *Clin. Chem.* 1988;34:764-765.

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91. Keren, D.F., McDonald, R.A., Carey, J.L.: Combined parenteral and oral immunization results in an enhanced mucosal immunoglobulin A response to *Shigella flexneri*. *Infect. Immun.* 1988;56:910-915.
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93. Keren, D.F., Warren, J.S., Lowe, J.B.: Strategy to diagnose monoclonal gammopathies in serum: High-resolution electrophoresis, immunofixation, and quantification. *Clin. Chem.* 1988;34:2196-2201.
94. Silbart, L.K. and Keren, D.F.: Reduction of intestinal carcinogen absorption by carcinogen-specific secretory immunity. *Science* 1989;243: 1462-1464.
95. Wassef, J.S., Keren, D.F., Mailloux, J.L.: The role of M cells in both initial antigen uptake and in ulcer formation in the rabbit intestinal loop model of Shigellosis. *Infect. Immun.* 57:858-863, 1989.
96. Keren, D.F., McDonald, R.A., Wassef, J.S., Armstrong, L.R., Brown, J.E.: The enteric immune response to shigella antigens. *Curr. Top. Microbiol. Immunol.* 146:213-223,1989.
97. Keren, D.F.: Mucosal IgA elaboration. *CRC Crit. Lab. Sci.* 27:159-177, 1989.
98. Keren, D.F.: High-Resolution Electrophoresis Aids Detection of Gammopathies. *Clin. Chem. News* 15:11-16, 1989.
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